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ABSTRACT

The information processing terms "content" and "address" are used to describe structural differences between the constructs of individual identity and identity in the equivalence sense. In both cases a sameness relation is established in spite of specific differences. The resulting constructs of identity are known to be involved in the achievement of "object permanence" and in the formation of classes; this essay suggests that the way in which they are arrived at is instrumental also in creating belief in an ontological reality. (MS)

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The Constructs of Identity or the Art of Disregarding Differences

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Abstract

The information processing terms "content" and "address" are used to describe structural differences between the constructs of individual identity and identity in the equivalence sense. In both cases a sameness relation is established in spite of specific differences. The resulting constructs of identity are known to be involved in the achievement of "object permanence" and in the formation of classes; this essay suggests that the way in which they are arrived at is instrumental also in creating our belief in an ontological reality.

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When we speak of "identity" it is often not immediately clear what we have in mind. Even within the restricted field of psychology textbooks the term crops up in chapters dealing with subjects as diverse as social groups, the concept of self, the period of formal operations, and object permanence. In each of these contexts the term has, of course, a somewhat different meaning. The kinds of "identity" with which I shall be concerned in this paper are those about which we talk in untechnical, ordinary English, and they involve the relationships indicated by sentences such as "the man they arrested is the identical one who escaped from prison last year," and "when Jane got her Cadillac, Sue went and bought an identical one."

Obviously the concept of identity cannot be the same in both sentences. The difference (in these examples, but not necessarily always) is even marked linguistically by the use of the definite as opposed to the indefinite article. In the first sentence we clearly have <u>one</u> man and two occasions or moments in time. In the second sentence, on the other hand, we may have only one occasion but we have to have <u>two</u> cars and what we seem to be saying is that they are alike in every respect. The first type of identity is sometimes called "individual identity" and the second "equivalence" (cf. Bruner, Goodnow, & Austin, 1965, p.2).

Though the separation of the two types of identity is not always made explicit, there is fairly general agreement that some form of identity concept is both a very early and a very important acquisition. William James, at the very beginning of this century,

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[1] A brief preliminary version of this paper was presented at the Fourth Biennial Southeastern Conference on Human Development, Nashville, Tennessee, April 1976.

the construction of the individual duration of things as well as in the construction of classes of equivalent things. Speaking of conceptual tools, he said:

> Out of them all our lowest ancestors probably used only, and then most vaguely and inaccurately, the notion of 'the same again.' But even then if you had asked them whether the same were a 'thing' that had endured throughout the unseen interval, they would probably have been at a loss, and would have said that they had never asked that question, or considered matters in that light.
>
> Kinds, and sameness of kind - what colossally useful denkmittel for finding our way among the many! The manyness might conceivably have been absolute. Experiences might have all been singulars, no one of them occurring twice. In such a world logic would have had no application; for kind and sameness of kind are logic's only instruments. (James, 1907/1955, p. 119)

More recently, Bruner has said: "Some primitive sense of identity is either innate, or develops well before the child is active in the manipulation of objects." (Bruner, 1966, p.186). Piaget, who explicitly rejects the idea that the concept of identity might be innate, agrees that at least individual identity must arise early since it is undoubtedly involved in the child's construction of "permanent objects" (Piaget & Voyat, 1968, p.2-3). Indeed, to search for and eventually find a hidden object implies that the finder will consider the found object the identical individual as the object he had or saw or otherwise experienced before it was hidden. The fully developed construct of "object permanence" necessarily requires such an assumption of individual identity and could not be achieved without it. Developmentally, then, something like a practical construct of identity would have to originate during the sensorimotor period. The time of origin, however, is not what I want to discuss in this paper. Instead, I shall try to outline the operational steps which are involved in the constructs of identity

and springs from considerations of the kind that would be entertained by a cyberneticist aiming at a functional model of cognitive processes, it fully confirms Piaget's finding that the development of "object permanence" lays the foundation also for the concepts of space, time, and causality.

In the context of developmental theories of cognition that stress the child's construction of reality, i.e. theories that see the child not as passive receiver but as active originator of knowledge, "reality" and the "knowledge" that constitutes it are under all circumstances the result of regularities and invariances which the experiencing organism carves out of his experience. Regularities and invariances, however, can be established only - as James saw so clearly - on the basis of experiences being experienced more than once. And to say that something has occurred twice is possible only if we keep some form of record of what occurs. Clearly, then, no recurrence can possibly be established without some survey of the records of past events. That requires - apart from memory and retrieval capabilities which we take for granted - that the experiencing organism's attention must be able to switch from "present" items to the records of "past" items. It is only by switches of this kind, from the one item to the other, that the comparison can be made which, in the absence of differences, may give rise to the result that two experiential items are the same and that, therefore, there has been a recurrence.[2] Thus, rather than ask in what ways experiential items may be the same, it seems, we have to ask first in what ways they can be different.

In principle there are two ways of differentiating experiential items. First, as soon as we organize experience into separate items (rather than experiencing the amorphous flow), these items will be irreducibly different from one another in the sense that each one

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[2] Such switching of attention from one item to another in order to ascertain whether or not there are differences, has been documented by Eliane Vurpillot in her studies on children's eye movements during visual comparison tasks (Vurpillot, 1968).

of them has to occupy a different place in the recorded sequence of our experiences. In computer jargon we may say that it has to have a different individual "address" within the area reserved for the recording of experience. I shall call this kind of diference an a-difference. Second, once we have several item-records, we may compare and find differences in what is recorded. I shall call this kind of difference a c-difference because it refers to a difference in the content of a record rather than to where the record is found.

Discriminating the two ways in which experiential records can differ is already a help in discriminating the two identity concepts with which we are concerned. In the case of the man arrested, there is practically no c-difference that we could not disregard or explain away in order to maintain his identity with the man who escaped from prison a year ago. His hair may have turned white, he may have lost a limb or two, and he may have changed most or all of his ideas - none of this would definitively disprove his identity. His individual identity, in fact, does not depend on what he looks like or on what he has or is, but rather on the continuity of his being, his existence, and that is a continuity which we seem to accept under certain circumstances even if we are quite unable to prove it "logically."[3] The case in which we want to decide whether or not two Cadillacs are identical in the equivalence sense is radically different in that the equivalence we are looking for must be established on the basis of the content of two records, i.e. it will be decided on the basis of the absence or presence of certain c-differences. I say certain c-differences because although equivalence identity might seem to require sameness on all counts and in all property dimensions, it is in fact not nearly so demanding. There are, indeed, certain characteristics that we can or even must disregard. For example, Vurpillot has stressed one fundamental

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[3] Note that there are, of course, circumstances that make individual identity extremely probable. A man who has already lost a leg is unlikely to turn up with both his legs a year later; and, as criminologists know, the same goes for lost teeth and whatever dentists or doctors put into a person to replace lost items.

> By convention, one difference is always excluded from the list of properties [to be compared] and that is the objects' location relative to the subject. Since they [the objects] can never appear at the same place at the same time, they will always be different from that point of view. (Vurpillot, 1972, p. 311; my translation.)

In other words, when two items are said to be "identical" in the sense of "equivalent in every respect," we understand that "in every respect" does not include spatial location. Indeed, if we wanted to verify that the Cadillac Sue bought is rightly considered "identical" with Jane's, a simple way of doing it would be to get Sue and Jane to park their cars side by side and then to compare them. Far from interfering with an equivalence verdict, the fact that the cars' location in space is not the same is the most irrefutable proof that we are actually dealing with two cars and therefore not with a case of individual identity.

This last observation raises a question as to how one might decide whether the relation between Jane's and Sue's cars is equivalence or individual identity if, for one reason or another, there were no opportunity to examine them at the same time. At first that may seem no serious obstacle. If we recorded the results of our inspection of Jane's Cadillac yesterday we can, of course, compare these results to what we find today when we are inspecting Sue's, and if there is a good match, we may still come up with a verdict of equivalence. But can we be sure that there really are two cars? In practice we should have little difficulty in answering that question. We would start looking for scratches and dents, and if we found any on the one car that were not on the other, we would feel justified in ruling out individual identity. In other words, to make sure that we are actually dealing with two items and therefore with equivalence, we search for individual marks to distinguish the two items and, once we have found such marks, we disregard them. It is also worth noting that such a search for individual marks to

the two items alternate, such that the individual identity of the one item has to be established across a record of the other. If we saw Jane yesterday and there was a scratch on her car's fender and today we see Sue with a car that does not have the scratch, she may, for all we know, have just fetched it from the body shop. But if we then see Jane again and her car still has the scratch, we would probably accept that as an indication that there are two cars. Such a pattern of alternate records, of course, presupposes the concept of individual identity as well as that of object permanence, because the one item has to be construed to "exist" while the other one is being examined. That is the reason why equivalence is so much easier to demonstrate when the two items can be arranged side by side. In that case the problem of the individual identities is reduced to perception. Examining the one item while not losing sight of the other confirms the continuity of both and thus the "fact" that there are two.

That perceptual continuity constitutes the unity of items is something we simply take for granted. From an operational point of view it would seem to be a basic requirement of economy. If no change is registered, that is, if consecutive records show no change of content, no c-difference, then they tend to merge because there simply is no reason to keep them apart by means of an a-difference. In visual perception as well as in tactual that is a commonplace. We consider something a unit until we register a change that we can categorize as a break, i.e. as the beginning of something else. Hence, as long as there is perceptual continuity we have no problem of individual identity. That problem arises only when we construct individual identity across an interval that breaks the perceptual or, indeed, experiential continuity of a unit.

Both Piaget's observations (1936, 1937) and Bower's experimental work (1966, 1974) with infants [redacted] indicate that homogeneous, continuous motion can take on the same connective function as the simple contiguity of records. Bower demonstrated that [redacted] very young infants will "track" a visual stimulus with their gaze even when the stimulus temporarily disappears. The important feature in that si-

own tracking motion that supplies the element of continuity through the interval during which there is no stimulus object to be perceived (Piaget, 1937/1954, p. 19). That is to say, records that manifest no change of content can be merged even across an interval, provided continuity is created by a homogeneous kinesthetic sensation.

Continuity can be created also when part of the content remains unchanged througout an intervening record. This happens in the kind of situation I described above, when we remove our attention from an item but do not lose sight of it. It happens rather more dramatically in conjunction with motion in situations such as this: We are watching a red truck (1) moving along a highway, (2) half disappearing behind a group of trees so that we can just see the top of its cabin or flashes of red through the foliage, and then (3) again moving along in full sight. Though through the intervening section (2) we actually perceive only a minimal part of the truck, we do not for a moment doubt its continuity. Situations like this must recur innumerable times in the early experience of infants when their visual world is full of obstacles which they cannot look around since they themselves are relatively immobile. The operational pattern, in these cases, is always the same. Two experiences (1) and (3) whose content matches very well are not contiguous (and therefore should not be able to merge into a unit); but the record (2) that separates them contains a partial match with (1) and (3) and this partial match (the top of the truck's cabin or its bright red color) is sufficient to construct continuity from (1) to (3) as though the two records were contiguous. This achievement of continuous unity across an interval clearly constitutes the foundation for the construct of individual identity.

In cases where the interval (2) is such that it contains no elements that could be construed as a continuation of (1) into (3), i.e. where there is neither the continuity of a perceptual element nor the continuity of a homogeneous kinesthetic feedback, it should be much more difficult to unite (1) and (3) across the interval to form one individual. This is in fact borne out by Piaget's observation that many children of four to six years of age have not yet made

the construction of a continuous individual difficult in the ~ cases is that between the sun yesterday and the sun today there are records of experiences that gained attention in their own right and that create a complete break between the sun-experiences that thus remain separate experiences kept apart by their a-difference.

As long as the linear sequence of experiential records is the only dimension in which we operate, it is quite impossible to consider two records one and the same individual unless these two records are either contiguous or at least partially continuous in that a common part represents them throughout the intervening interval. In order to achieve unity in spite of an interval, a connection has to be created around that interval, which is to say, outside the experiential sequence. Such a connection, in fact, requires the creation of a new dimension, a kind of area where items can continue without being experienced, parallel to what is being experienced, and hypothetically accessible to experience all along. This assumption of the continuity of an experiential item, even when nothing in the actual intervening experience suggests such continuity, is subsumed in what Piaget designates with the term "externalization". The mysterious outside realm in which this non-experiential continuity of intermittently experienced items is implemented is, of course, the realm of ontological reality. It is the world of "being" where, supposedly, all the items we have experienced as well as those we will experience hibernate while we are not experiencing them. Thus, with the assumption of an inherent continuity of items, an inherent permanence of objects, we initiate the construction of a world that "exists", a world that "is there" whether or not we happen to perceive it, a world that ultimately becomes wholly detached from the experiencing subject.[4]

To complete the externalization, the experiencer has to take yet another step. The first connections outside the experiential

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[4] Once this detachment is complete, the subject inevitably comes to ask the strange question as to how he can possibly know such a prefabricated, independently real, world.

verdict resulting from a comparison of a "present", i.e., most recently recorded item and they go to a record that precedes some interval. As such, these connections make a unit out of the two separate records, but this unit does not stretch beyond the two records. The assumed continuity bridges the gap of the a-difference between the two experiences, and that by itself does not yet give us proper "permanence" or wholly independent "existence". However, it seems that once a connection has been created between two records, a third record can easily be added whenever it occurs, and then a fourth, and so on until the repetition has become a routine that can be activated both "forward" towards the not-yet-experienced and "backward" towards the not-recorded. Once an item's continuity has been assumed as a general principle, making "object permanence" a feature of the world rather than of the experiencer's processing of experience,[5] every further experiential item that is considered a good enough match can be connected to the original occurrence. That is to say, we can now have a record of the item that is no longer the record of a single specific experience with a specific address in the sequence of experiential records, but a compound record of a recurrently experienced item. And since the item has been given "individual identity", i.e. continuity even when it is not being experienced, the record, too, acquires a kind of continuity in that it becomes independently accessible as a "concept" or simply as the idea of the item.

This hypothetical model of some of the logical steps that are implicit in the development of object permanence helps to explain the apparent duality of the concept of identity. As the experiencer creates an object's existential continuity hand in hand with his own concept or representation of the object, he in fact ends up with two rather different kinds of permanence. On the one hand, there is the permanence attributed to the object, giving it a life

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[5] The assumption that "permanence" is a feature of things in themselves, as they are in an independent world, is of the same kind as Galileo's assumption that the basic form of motion is rectilinear and infinite. Both assumptions are made and maintained because they seem (temporarily?) to facilitate the orderly coordination of the pieces into which we have cut our experience.

perienced. On the other, there is the permanence of the concept, derived from recurrent experience but now detached from it, a permanence that enables the experiencer to call forth the object as representation regardless of the present experiential context.

The first, the ontological permanence, is the foundation of our concept of individual identity. In the initial example, the statement "the man they arrested is the identical one who escaped from prison last year," entails that there is a continuous existential connection between the man last year and the man now, and this connection is having been, being, and remaining one and the same. - One might say that there is nothing extraordinary about that, since the man himself can supply, from his own recollection, massive evidence for his continued existence. The remarkable thing, however, is that we all developed the belief in the permanence of objects quite some time before we were able to interpret and benefit fro- the verbal reports of other people - and the objects in whose permanence we first came to believe could not tell us that they exist.

The second type of permanence, the perpetuation of a compound record in the form of a concept, underlies equivalence identity. Any record can at any time be set up as paradigm in comparisons made to establish whether the content of some other record is or is not the same. It is very important to realize that "the same" in such comparisons means that no difference was found in the dimensions that were examined. As we have already seen, the dimension of spatial location is rarely if ever considered, and for certain items there are other features that we are quite ready to disregard in our comparison. There is, in fact, no fixed rule as to the number of dimensions or properties in which two items have to be judged the same in order to be called "identical" in the equivalence sense. Instead, those records that are frequently set up as paradigm become a compound of recurrent experience, consisting of what is common to all instances and excluding the individual characteristics of single occurrences. In other words, they too are detached from the actual records of ex-

prototypes or paradigms for every form of classification. Such a prototype or paradigm contains the criterial values in a specific limited number of dimensions and any experiential item that matches those criterial values will be considered equivalent. The fact that equivalence is established on the basis of such a paradigm explains why, in the case of the two Cadillacs, the scratches and dents are irrelevant when it comes to establishing whether or not the two cars are identical in the equivalence sense. The conceptual paradigm, in that case, would contain the specification of properties such as color, model, and year, whereas things such as scratches, dents, worn tires, or rusted mufflers would not be considered at all.

There is one further difference to be found between the two types of identity. If, in the case of equivalence, we doubt a verdict of identity, we can try to eliminate the doubt by comparing each of the candidates once more to the paradigm. If we have doubts about a verdict of individual identity, it is not by comparing the former record with the present one that we can decide the issue; what we have to establish is the continuity of the individual item between the records, that is to say, we have to confirm its continuity of "existence". Constructing the existential continuity of the items we experience requires some of the most important conceptual tools we possess. First among them is the concept of change, which enables us to consider two (or more) experiential items one and the same individual while focusing our attention on a difference between them.[6] The apparent contradiction between the experiential differences and the match required by the concept of identity is then successfully neutralized by introducing the concept of causation, which allows us to categorize the difference as "effect" of some recurrent adjunct or condition that can be categorized as the "cause" (cf. von Glasersfeld, 1974). On an even more general level, individual identity, since it relies on the construct of existential continuity,

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6 The studies Piaget and his collaborators have published in their volume Epistémologie et psychologie de l'identité (Piaget et al., 1968) deal exclusively with the difficulties children of three years and more have in constructing individual identity in the face of various changes and transformations.

the concept of time. Without the juxtaposition of the subject's experiential continuity and the posited existential continuity of some other process (e.g. the movement of a clock) the concept of duration and that of time, as a dimension separate from the simple sequence of experiential items, could never arise. Similarly, equivalence identity, since it requires a plurality of equivalent items, inevitably leads to some concept of space if the equivalent items are given existential continuity. For two Cadillacs to exist side by side, we must have constructed some kind of space.

To conclude, I should like to emphasize a point made somewhat casually at the outset. Developmental theories of cognition tend to be "constructivist" today. That is to say, they consider the knower's activity as the determinant of much of his knowledge. My brief and in many ways still tentative analysis of the concepts of identity may help to confirm the constructivist attitude. Long ago, William James already spoke of "sublime tricks of human thought, our ways of escaping bewilderment in the midst of sensation's irremediable flow." (James, 1907/1955, p. 123) As long as we are wholly immersed in sensation's irremediable flow there is no yesterday and no tomorrow, no then, no now, no continuity of anything except the very flow of experience; nor are there separate, specifiable states of consciousness. To have any of that, we must differentiate, we must cut the flow and find differences between the chunks, we must make distinctions (Brown, 1969). As soon as we begin to cut, however, we find that "yesterday's and today's states of consciousness have no substantial identity, for when one is here the other is irrevocably dead and gone." (James, 1892/1962, p. 214) Thus, having cut the flow by making distinctions, we have to get busy trying to relate what we cut and to assemble a world of things and facts, of regularities and invariances, of individuals and classes. Among the very first relational concepts we use in that task is the relation of sameness with its two possibilities of constructing identity, both powerful tools with which we bridge the cuts we make and build the relatively stable structures that we call our world.

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